CIO Council Meeting
December 15, 2005

ICN Update….

Research & Development

Emerging Technologies

Emerging Technologies...

- ◆ Wireless Broadband Access

- ◆ WiMAX

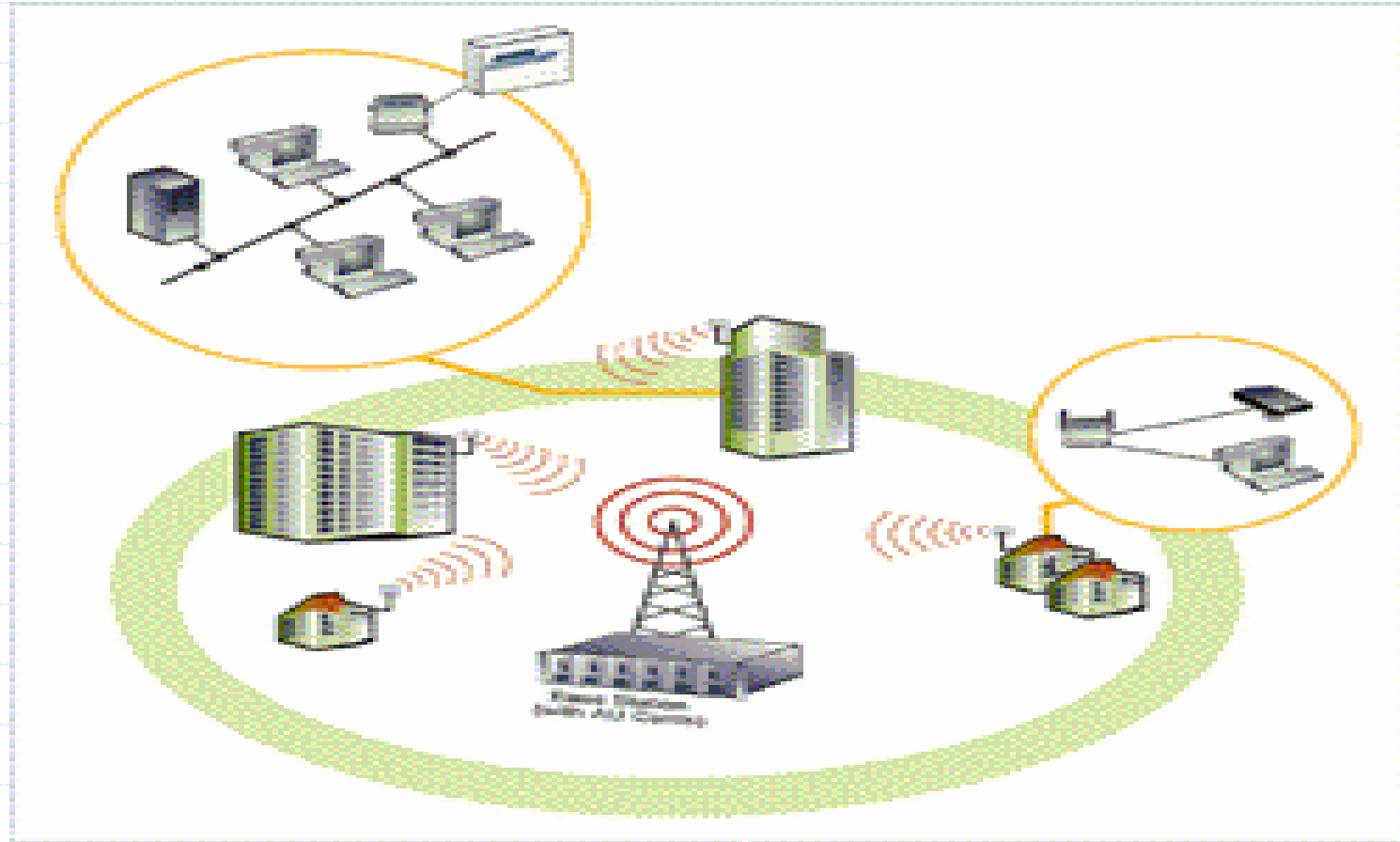- ◆ Ethernet over TDM

- ◆ IMS

- ◆ Ethernet

Fixed Wireless Access

- Point-to-Point (PTP)

  Megabit Ethernet Data

  Proven Deployments

  Alternative to High Cost Fiber

  Licensed and Unlicensed

  TDM Support Available

Fixed Wireless Access

◆ Point-to-Multipoint (PMP)

  Megabit Ethernet Data

  Multiple Customer Locations

  Licensed and Unlicensed

  T-1 Support options

  Planned Deployments

Point-to-Multipoint

WiMAX, what is it?

- **W**orldwide **I**nteroperability for **M**icrowave **A**ccess.
- Wireless broadband access in **fixed, nomadic, portable** and **mobile** applications.
- Based on IEEE 802.16 and ETSI HiperMAN wireless MAN standards and specifications.

WiMAX

- WiMAX Forum™ an industry-led, non-profit corporation, established June 2001 with current equipment manufactures, service providers and systems integrators membership at >230.

- WiMAX Certified products that pass Broadband Wireless Access conformity and interoperability testing.
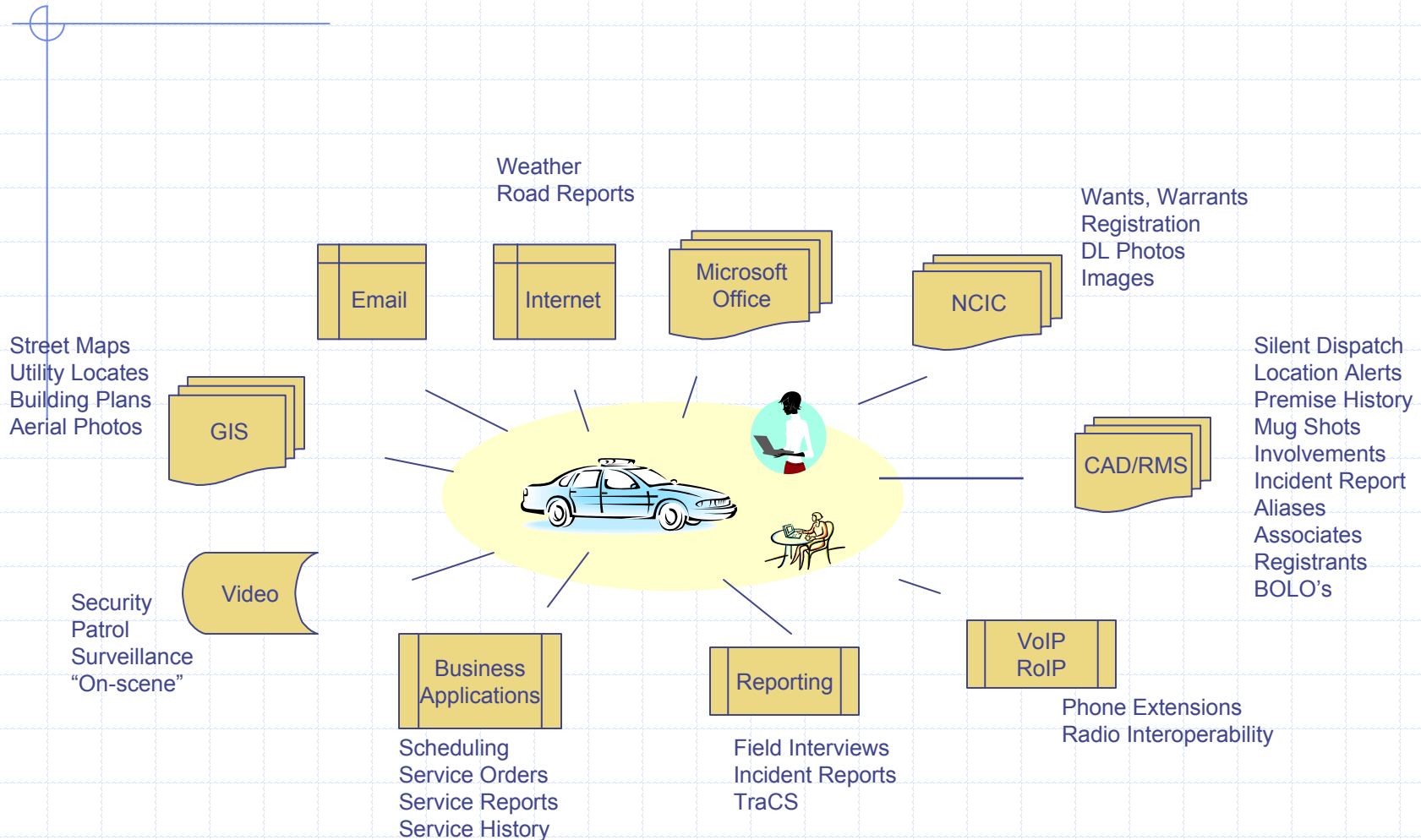
IEEE 802.16-2004

- 802.16-2004 standard Complete.

  2-11 GHz and 10-66 GHz

  Licensed & unlicensed

  Fixed Access; PTP & PMP

  OFDM Technology

  LOS & NLOS

  Addresses Security

IEEE 802.16e

- 802.16.e standard recently ratified

  Addresses Mobility

  SOFDM (Scaleable OFDM)

- WiMAX Forum is asked to expedite the certification process.

- Not compatible with 802.16-2004

Mobility, Why public safety needs wireless broadband.

Weather
Road Reports

Wants, Warrants
Registration
DL Photos
Images

Email

Internet

Microsoft Office

NCIC

Street Maps
Utility Locates
Building Plans
Aerial Photos

GIS

Silent Dispatch
Location Alerts
Premise History
Mug Shots
Involvements
Incident Report
Aliases
Associates
Registrants
BOLO's

CAD/RMS

Security
Patrol
Surveillance
"On-scene"

Video

Business Applications

Reporting

VoIP
RoIP

Scheduling
Service Orders
Service Reports
Service History

Field Interviews
Incident Reports
TraCS

Phone Extensions
Radio Interoperability

WiMAX Certification

◆ System Profiles...

Basic common system requirements.

Current Profile for 802.16-2004

◆ Certification Profiles...

System Profile

Relevant Spectrum

Duplex Methods (TDD or FDD)

Channel Width

WiMAX Certified Products

- **802.16-2004**

  Air Protocol Interop 1st Qtr. 2006

  Outdoor CPE Interop 1st Half 2006

  Indoor CPE/PCMIA   2nd Half 2006

- **802.16e**

  Portable Devices   1st Qtr. 2007

  Mobile Services   2nd Half 2007

Wireless Concerns

- Spectrum Issues (Global Uniformity)
- Licensed vs. Unlicensed
- Coverage Area
- Bandwidth Required per Application
- Government Frequencies
    - 4.9 GHz
    - 700 MHz

Competing Wireless Technologies

- ◆ Cellular

  Not Going Away.

  3G (Includes Mb Data)

- ◆ WiFI

  Standards based 802.11

- ◆ Satellite

  Great Coverage but low uplink

Ethernet over TDM

- ◆ Another method of extending Ethernet from the ICN to the Customer.
- ◆ Standard T-1 circuits with a Ethernet to TDM conversion device on each end.
- ◆ Multiple T-1's (bonding, Inverse Multiplexing for Multiple Megabit Data
- ◆ Low Latency & Transparent to the data

IMS (IP Multimedia Subset)

- **IMS is standards-based & designed to allows for a broad range of SIP-based services across packet or switched networks to any customer, fixed or wireless.**
- **Major Carriers are Deploying IMS**

ICN Long Range Plan?

◆ The ICN is taking a serious look at how to transition the network from an ATM based Core/Edge network to an Ethernet based Core/Edge network.

◆ Ethernet at Layer 2 with strategic placements of Layer 3 devices are being studied.

◆ Voice, Video and Data on Ethernet.

Emerging Technologies...

QUESTIONS